

RD27768-3  
GE3-0083

CLAIMS

1. (Currently Amended) A method for rapidly screening volatile substances in a sample, said method comprising the steps of:

- a) introducing a volume of said sample into a vapor delivery line;
- b) volatilizing at least a portion of said volume as said volume is carried through said vapor delivery line;
- c) contacting at least a portion of said volatilized volume with a sensor element, wherein the sensor element is coated with a hard-soft block elastomer; and wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and
- d) monitoring a signal from said sensor element,

wherein said signal comprises a response of said sensor element to a temporally-determined variation in a concentration of said vapor proximate said sensor element, and wherein said signal is capable of providing both qualitative and quantitative information about said volatile substances in said sample.

2. (Original) The method of claim 1, wherein said sensor element is an optical sensor element.

3. (Original) The method of claim 1, wherein said sensor element is an electrochemical sensor element.

4. (Original) The method of claim 1, wherein said sensor element comprises a semiconductor.

5. (Cancelled)

6. (Original) The method of claim 1, wherein said sensor element comprises a quartz crystal.

RD27768-3  
GE3-0083

7. (Cancelled)
8. (Currently Amended) The method of claim 7~~1~~, wherein the ~~said sensor element is coated with~~hard-soft block elastomer comprises a silicone polyimide.
9. (Currently Amended) The method of claim 7~~1~~, wherein said hard-soft block elastomer comprises ~~sensor element is coated with a~~ block dimethylsiloxane-carbonate copolymer.
10. (Cancelled)
11. (Cancelled)
12. (Original) The method of claim 1, wherein step c) comprises contacting at least a portion of said volatilized volume with an array of sensor elements.
13. (Original) The method of claim 1, wherein said volume is carried through said vapor delivery line by an inert carrier gas.
14. (Previously Presented) The method of claim 13, wherein said inert carrier gas is flowing through said vapor delivery line at a rate of between about 1 mL/min and about 1000 mL/min.
15. (Original) The method of claim 14, wherein said inert carrier gas is flowing through said vapor delivery line at a rate of between about 150 mL/min and about 500 mL/min.
16. (Cancelled)
17. (Original) The method of claim 1, wherein said signal from said sensor element is monitored as a function of time.
18. (Original) The method of claim 17, wherein said signal is monitored with at least one frequency counter to produce data.
19. (Original) The method of claim 18, wherein said data are stored in a computer,

RD27768-3  
GB3-0083

20. (Currently Amended) The method of claim ~~11~~13, further comprising the step of controlling the flow of said inert carrier gas through said vapor delivery line with flow controllers in communication with a computer.

21. (Currently Amended) A method for rapidly screening volatile substances in a sample, said method comprising the steps of:

- a) introducing a volume of said sample into a vapor delivery line;
- b) volatilizing at least a portion of said volume as said volume is carried through said vapor delivery line;
- c) contacting at least a portion of said volatilized volume with a sensor element comprising a quartz crystal and a chemically sensitive film proximate the surface of said crystal, wherein the chemically sensitive film comprises a hard-soft block elastomer; and wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and
- d) monitoring a measured property of said chemically sensitive film as a function of time to yield both qualitative and quantitative information about said volatile substances in said sample.

22. (Withdrawn) An apparatus for rapidly screening volatile substances in a sample, said apparatus comprising:

- a) an injector;
- b) a vapor delivery line in fluid communication with said injector;
- c) a sensor element in fluid communication with said vapor delivery line and positioned downstream of said injector and said vapor delivery line, wherein all components upstream of said sensor element are substantially free of sorbent materials; and
- d) a monitor in communication with said sensor element.

RD27768-3  
GE3-0083

23. (Withdrawn) The apparatus of claim 22, wherein said sensor element is an optical sensor element.

24. (Withdrawn) The apparatus of claim 22, wherein said sensor element is an electrochemical sensor element.

25. (Withdrawn) The apparatus of claim 22, wherein said sensor element comprises a semiconductor.

26. (Withdrawn) The apparatus of claim 22, wherein said sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of said sensor element.

27. (Withdrawn) The apparatus of claim 22, wherein said sensor element comprises a quartz crystal.

28. (Withdrawn) The apparatus of claim 26, wherein said sensor element is coated with a hard-soft block elastomer.

29. (Withdrawn) The apparatus of claim 28, wherein said sensor element is coated with a silicone polyimide.

30. (Withdrawn) The apparatus of claim 28, wherein said sensor element is coated with a block dimethylsiloxane-carbonate copolymer.

31. (Withdrawn) The apparatus of claim 26, wherein said sensor element is coated with an amorphous fluoropolymer.

32. (Withdrawn) The apparatus of claim 31, wherein said sensor element is coated with a random copolymer of tetrafluoroethylene and perfluoro-2,2-dimethyl-1,3-dioxole.

33. (Withdrawn) The apparatus of claim 22, comprising an array of sensor elements in fluid communication with said vapor delivery line.

RD27768-3  
GE3-0083

34. (Withdrawn) The apparatus of claim 26, wherein said monitor is adapted to receive a signal from said sensor element representing a measured property of said chemically sensitive film.

35. (Withdrawn) The apparatus of claim 34, wherein said monitor comprises a frequency counter to produce data representing said signal as a function of time.

36. (Withdrawn) The apparatus of claim 35, wherein said monitor further comprises a computer adapted to store said data.

37. (Currently Amended) A method for rapidly screening volatile substances in a sample, the method comprising the steps of:

- (a) introducing a volume of said sample into a vapor delivery line;
- (b) volatilizing at least a portion of said volume as said volume is carried through said vapor delivery line;
- (c) contacting at least a portion of said volatilized volume with a sensor element, wherein the sensor element is coated with a hard-soft block elastomer; and wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and
- (d) monitoring a signal from said sensor element as a function of time to yield both qualitative and quantitative information about said volatile substances in said sample.

38. (Previously Presented) The method of claim 37, wherein said volume is carried through said vapor delivery line by an analyte-free carrier gas.

39. (Previously Presented) The method of claim 38, further comprising the step of controlling the flow of said analyte-free carrier through said vapor delivery line with flow controllers in communication with a computer.

RD27768-3  
GE3-0083

40. (Previously Presented) The method of claim 37, further comprising purging the system to remove any remaining analyte vapors prior to introduction of a second sample into said vapor delivery line.

41. (Previously Presented) The method of claim 37, wherein the sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of the sensor element.

42. (Previously Presented) The method of claim 37, wherein said sensor comprises a quartz crystal.

43. (Previously Presented) The method of claim 37, wherein step (c) comprises contacting at least a portion of said volatilized volume with an array of sensor elements.

44. (Previously Presented) The method of claim 37, wherein said sensor element is an optical element.

45. (Previously Presented) The method of claim 37, wherein said sensor element is an electrochemical element.